

**REMARKS**

Claims 1-3 and 11-27 are pending in this application.

Applicants have amended claims 1, 17, and 24. The changes to these claims made herein do not introduce any new matter.

**Rejection Under 35 U.S.C. § 112**

Applicants respectfully request reconsideration of the rejection of claims 1-27 under 35 U.S.C. § 112, second paragraph, as being indefinite (as claims 4-10 were canceled in the Preliminary Amendment, Applicants assume that the Examiner intended to reject only pending claims 1-3 and 11-27). Applicants have amended each of independent claims 1, 17, and 24 to address the indefiniteness concerns noted by the Examiner. In particular, Applicants have amended the claims to specify that 1) the predefined library is independent of the compiler-generated program code that is to be optimized, and 2) the program code is searched for program code fragments that perform the same function as a respective one of the library code fragments. Support for feature 1) can be found in Applicants' specification at, for example, Paragraph [0018], and support for feature 2) can be found in Applicants' specification at, for example, Paragraphs [0015] and [0028]. In light of the foregoing changes, Applicants submit that claims 1-3 and 11-27 now satisfy the definiteness requirement of 35 U.S.C. § 112, second paragraph, and request that the rejection of these claims thereunder be withdrawn.

**Rejection Under 35 U.S.C. § 101**

Applicants respectfully request reconsideration of the rejection of claims 17-27 under 35 U.S.C. § 101 as being directed toward non-statutory subject matter. In response to the Examiner's concerns regarding non-statutory subject matter, Applicants have amended independent claim 17 to specify that the computer program product includes a computer-readable storage medium and program instructions for a general-purpose computer stored in

the computer-readable storage medium. With regard to independent claim 24, Applicants respectfully traverse the Examiner's characterization of the claimed portable data carrier, which includes a processor core, a first memory area, and a second memory area, as being software only. As set forth in Applicants' specification, the portable data carrier may be, for example, either a chip card (i.e., smart card) or chip module, and the processor core is the processor section of the semiconductor chip of the portable data carrier (see reference number 12 in Figure 1 and Paragraph [0023]). Thus, the subject matter defined in claim 24 is not software only. Nevertheless, to expedite prosecution of the subject application, Applicants have amended claim 24 in the manner suggested by the Examiner, namely, changing the term "processor core" to "processor."

Accordingly, in view of the foregoing changes, Applicants submit that claims 17-27 now define statutory subject matter under 35 U.S.C. § 101, and request that the rejection of these claims thereunder be withdrawn.

#### Rejection Under 35 U.S.C. § 102

Applicants respectfully request reconsideration of the rejection of claims 1-3, 11-17, and 19-27 under 35 U.S.C. § 102(e) as being anticipated by *Siska* (US 6,263,429 B1). As will be explained in more detail below, the *Siska* reference does not disclose each and every feature of the subject matter defined in independent claims 1, 17, and 24, as amended herein.

#### Overview of the Presently Claimed Subject Matter

The presently claimed subject matter relates to the field of optimizing compiler-generated program code, with the program code being intended for execution within a portable data carrier such as, for example, a smart card. The portable data carrier has a first memory area and a second memory area. By way of example, the first memory area may be an EEPROM, while the second memory area may be a mask-programmed ROM. Generally speaking, storing the program code in the EEPROM is desirable because it provides more

flexibility for changes or for the production of small batches of data carriers. On the other hand, mask-programmed ROM uses less chip area per memory cell than EEPROM, so that it would also be desirable to use the ROM to as large an extent as possible.

The claimed subject matter, therefore, strives to provide a technique for program optimization that, on the one hand, uses the mask-programmed ROM or a comparable memory (i.e., the second memory area specified in the claims) as much as possible while, on the other hand, achieves full flexibility for program updates or for the production of small batches of data carriers.

This problem is solved by an optimization process that is performed on compiler-generated program code. The claimed subject matter makes use of a predefined library of code fragments that is stored in the second memory area (e.g., the ROM or comparable memory). The predefined library is independent of the compiler-generated program code that is to be optimized.

As specified in the claimed subject matter, the compiler-generated program code is searched for code fragments that perform the same function as a respective one of the library code fragments in the predefined library. Such program code fragments in the compiler-generated program code are replaced by respective calls to the corresponding library code fragment in the predefined library.

The claimed subject matter saves memory in the first memory area (e.g., the EEPROM or comparable memory) because, in the optimized program code, some of the original code fragments have been replaced by calls to the predefined library. On the other hand, full flexibility is retained since a changed version of the program code can be written into the first memory (e.g., the EEPROM or comparable memory area) at any time. The same is true for the production of small batches of data carriers that use one and the same

predefined library, but may have completely different programs stored in the first memory area (e.g., the EEPROM or comparable memory area).

The Prior Art Distinguished from the Presently Claimed Subject Matter

The *Siska* reference discloses a method of compressing programs, particularly programs that are used in embedded systems. A program is examined for sequences of line code that are either identical or substantially similar. When such a sequence is identified, one uncompressed version of the sequence is stored as a microroutine in a microroutine area, and each occurrence of the sequence in the program is replaced by a microcall to the newly added microroutine.

In the *Siska* reference, the microroutines and the calls that replace the microroutines are determined in one and the same optimization run for the program that is to be optimized. This is apparent from, for example, Figure 3A of the *Siska* reference, where the occurrences of a code sequence are identified in steps 300, 302, and the code sequence is stored as a microroutine in the microroutine area in step 305, and where the occurrences of the sequence are replaced by microcalls in step 306.

Thus, in view of the foregoing, the microroutine collection of *Siska* is based on the actual program to be compressed. In contrast, the presently claimed subject matter uses a *predefined* library that is *independent* of the compiler-generated program code that is to be optimized. The *Siska* reference does not disclose (or suggest) this feature of the presently claimed subject matter.

Furthermore, the *Siska* reference teaches to store both the microroutines and the remainder of the program in ROM (see column 13, lines 10-20). While the system of *Siska* provides a reduction of the overall program size (i.e., a reduction of the total ROM needed to store both the microroutines and the remainder of the program), it does not provide any flexibility for program changes or for the production of small batches of embedded systems.

This is in contrast to the presently claimed subject matter, in which a rather large amount of ROM or comparable memory (i.e., the second memory area specified in the claims) is used for storing the predefined library, which in turn enables a reduction of the memory requirements in the first memory area (i.e., the EEPROM or comparable memory).

Accordingly, in view of the foregoing, independent claims 1, 17, and 24, as amended herein, are patentable under 35 U.S.C. § 102(e) over *Siska*. Claims 2, 3, and 11-16, each of which depends from claim 1, claims 19-23, each of which depends from claim 17, and claims 25-27, each of which depends from claim 24, are likewise patentable under 35 U.S.C. § 102(b) over *Siska* for at least the same reasons set forth above with regard to the applicable independent claim.

#### Rejection Under 35 U.S.C. § 103

Applicants respectfully request reconsideration of the rejection of claim 18 under 35 U.S.C. § 103(a) as being unpatentable over *Siska* in view of *Wilkinson et al.* (“*Wilkinson*”) (US 2008/0115117 A1). Claim 18 depends from claim 17. The deficiencies of the *Siska* reference relative to the subject matter defined in present claim 17 are discussed above in connection with the anticipation rejection. The *Wilkinson* reference does not cure the above-discussed deficiencies of the *Siska* reference relative to the subject matter defined in present claim 17. Accordingly, claim 18 is patentable under 35 U.S.C. § 103(a) over the combination of *Siska* in view of *Wilkinson* for at least the reason that this claim depends from claim 17.

Furthermore, with regard to any alleged obviousness of the presently claimed subject matter, as set forth in Applicants’ specification (see Paragraph [0010]), it is a surprising result that a marked reduction of the size of the program code that is provided for storage in the first memory area can be achieved with the predefined library of the presently claimed subject matter. Before the development of the presently claimed subject matter, one having ordinary skill in the art would not have thought that any meaningful code size savings were possible

with a predefined library of a realistic extent. Thus, the result obtained by the presently claimed subject matter demonstrates that the expectation of those having ordinary skill in the art was not correct.

Conclusion

In view of the foregoing, Applicants respectfully request reconsideration and reexamination of claims 1-3 and 11-27, as amended herein, and submit that these claims are in condition for allowance. Accordingly, a notice of allowance is respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at **(408) 749-6902**. If any additional fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 50-0805 (Order No. WACHP002).

Respectfully submitted,  
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